Package 'spinyReg'

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Type Package

Title Sparse Generative Model and Its EM Algorithm

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Description Implements a generative model that uses a spike-and-slab like prior distribution obtained by multiplying a deterministic binary vector. Such a model allows an EM algorithm, optimizing a type-II log-likelihood.

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Imports methods

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spinyReg *spinyReg*

Description

Computethe path of solution of a spinyReg fit.

Usage

```
spinyreg(X, Y, alpha = 0.1, gamma = 1, z = rep(1, ncol(X)),
  intercept = TRUE, normalize = TRUE, verbose = 1, recovery = TRUE,
  maxit = 1000, eps = 1e-10)
```

Arguments

X	matrix of features. Do NOT include intercept.
Y	matrix of responses.
alpha	numeric scalar; prior value for the alpha parameter (see the model's details). Default is 0.1.
gamma	numeric scalar; prior value for the gamma parameter (see the model's details). Default is 1.
z	numeric vector; prior support of active variable. Default is rep(1,p), meaning all variable activated
intercept	logical; indicates if a vector of intercepts should be included in the model. Default is TRUE.
normalize	logical; indicates if predictor variables should be normalized to have unit L2 norm before fitting. Default is TRUE.
verbose	integer; activate verbose mode from '0' (nothing) to '2' (detailed output). should be included in the model. Default is TRUE.
recovery	logical; indicates if the full path of models should be inspected for model selection. Default is TRUE.
maxit	integer; the maximal number of iteration (i.e. number of alternated optimization between each parameter) in the Expectation/Maximization algorithm.
eps	a threshold for convergence. Default is 1e-10.

Value

an object with class spinyreg, see the documentation page spinyreg for details.

See Also

See also spinyreg.

Examples

```
## Not run:
data <- read.table(file="http://statweb.stanford.edu/~tibs/ElemStatLearn/datasets/prostate.data")
x <- data[, 1:8]
y <- data[, 9]
out <- spinyreg(x,y,verbose=2)

## End(Not run)
```

---

spinyreg-class *Class "spinyreg"*

Description

Class of object returned by the **spinyreg** function.

Slots

`coefficients`**:** numeric vector of coefficients with respect to the original input. Contains the intercept if the model owns any.

`alpha`**:** numeric scalar.

`gamma`**:** numeric scalar.

`normx`**:** Vector (class `"numeric"`) containing the square root of the sum of squares of each column of the design matrix.

`residuals`**:** Vector of residuals.

`r.squared`**:** scalar giving the coefficient of determination.

`fitted`**:** Vector of fitted values.

`monitoring`**:** List (class `"list"`) which contains various indicators dealing with the optimization process.

`intercept`**:** Logical which indicates if a intercept is included in the model.

Methods

This class comes with the usual `predict(object, newx, ...)`, `fitted(object, ...)`, `residuals(object, ...)`, `coefficients(object, ...)`, `print(object, ...)` and `show(object)` generic (undocumented) methods.

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